MINOLTA

# Service Manual

## [Field Service]

The essentials of imaging

# Di850

Dual references may be used on the following:

| Official Options name | : | Popular Options name |
|---|---|---|
| EDH-5 | : | RADF |
| C-403/C-404 | : | LT and LCT |
| FN-115 | : | FNS |
| FN-7 | : | FNS |
| Cover Inserter C | : | PI |
| PK-3 | : | PU |
| TMG-2 | | TU |
| ZK-2 | : | PZ |
| In-System Writer | : | ISW |

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APPENDIX
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# SAFETY AND IMPORTANT WARNING ITEMS

Read carefully the Safety and Important Warning Items described below to understand them before doing service work.

## IMPORTANT NOTICE

Because of possible hazards to an inexperienced person servicing this copier as well as the risk of damage to the copier, Minolta Corporation strongly recommends that all servicing be performed only by Minolta-trained service technicians.

Changes may have been made to this copier to improve its performance after this Service Manual was printed. Accordingly, Minolta Corporation does not warrant, either explicitly or implicitly, that the information contained in this Service Manual is complete and accurate.

The user of this Service Manual must assume all risks of personal injury and/or damage to the copier while servicing the copier for which this Service Manual is intended.

Therefore, this Service Manual must be carefully read before doing service work both in the course of technical training and even after that, for performing maintenance and control of the copier properly.

Keep this Service Manual also for future service.

## DANGER, WARNING, AND CAUTION SYMBOLS AND EXPRESSIONS

In this Service Manual, each of three expressions " ⚠ DANGER," " ⚠ WARNING," and " ⚠ CAUTION" is defined as follows together with a symbol mark to be used in a limited meaning.

When servicing the copier, the relevant works (disassembling, reassembling, adjustment, repair, maintenance, etc.) need to be conducted with utmost care.

⚠ DANGER :Action having a high possibility of suffering death or serious injury

⚠ WARNING :Action having a possibility of suffering death or serious injury

⚠ CAUTION :Action having a possibility of suffering a slight wound, medium trouble, and property damage

Symbols used for important warning items are defined as follows:

△ :Precaution

⃠ :Prohibition

● :Direction


General precaution


Electric shock


Heated surface


General prohibition


Do not touch with wet hand


Do not disassemble


General instruction


Unplug

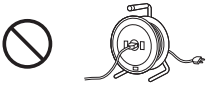
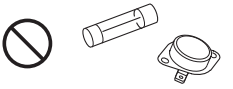
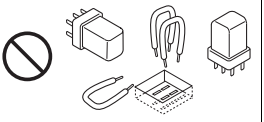
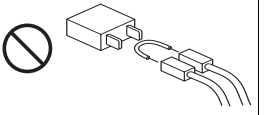
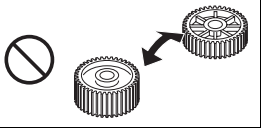

Ground/Earth

# SAFETY WARNINGS

## [1] MODIFICATIONS NOT AUTHORIZED BY MINOLTA

Minolta copiers are renowned for their high reliability. This reliability is achieved through high-quality design and a solid service network.

Copier design is a highly complicated and delicate process where numerous mechanical, physical, and electrical aspects have to be taken into consideration, with the aim of arriving at proper tolerances and safety factors. For this reason, unauthorized modifications involve a high risk of degradation in performance and safety. Such modifications are therefore strictly prohibited. the points listed below are not exhaustive, but they illustrate the reasoning behind this policy.

| ⚠ PROHIBITED ACTIONS: | |
|---|---|
| • Using any cables or power cord not specified by Minolta. |  |
| • Using any fuse or thermostat not specified by Minolta. Safety will not be assured, leading to a risk of fire and injury. |  |
| • Disabling fuse functions or bridging fuse terminals with wire, metal clips, solder or similar object. |  |
| • Disabling relay functions (such as wedging paper between relay contacts) |  |
| • Disabling safety functions (interlocks, safety circuits, etc.) Safety will not be assured, leading to a risk of fire and injury. |  |
| • Making any modification to the copier unless instructed by Minolta | |
| • Using parts not specified by Minolta |  |

## [2] CHECKPOINTS WHEN PERFORMING ON-SITE SERVICE

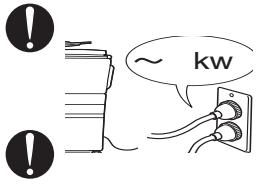
Minolta copiers are extensively tested before shipping, to ensure that all applicable safety standards are met, in order to protect the customer and customer engineer (hereafter called the CE) from the risk of injury. However, in daily use, any electrical equipment may be subject to parts wear and eventual failure. In order to maintain safety and reliability, the CE must perform regular safety checks.

1.Power Supply

### ⚠WARNING: Wall Outlet

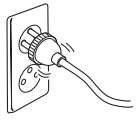
- Check that mains voltage is as specified. Plug the power cord into the dedicated wall outlet with a capacity greater than the maximum power consumption.
  If excessive current flows in the wall outlet, fire may result.

- If two or more power cords can be plugged into the wall outlet, the total load must not exceed the rating of the wall outlet.
  If excessive current flows in the wall outlet, fire may result.

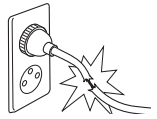



### ⚠WARNING: Power Plug and Cord

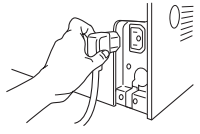
- Make sure the power cord is plugged in the wall outlet securely.
  Contact problems may lead to increased resistance, overheating, and the risk of fire.



- Check whether the power cord is damaged. Check whether the sheath is damaged.
  If the power plug, cord, or sheath is damaged, replace with a new power cord (with plugs on both ends) specified by Minolta. Using the damaged power cord may result in fire or electric shock.

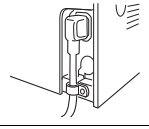


- When using the power cord (inlet type) that came with this copier, be sure to observe the following precautions:
  a. Make sure the copier-side power plug is securely inserted in the socket on the rear panel of the copier.
     Secure the cord with a fixture properly.
  b. If the power cord or sheath is damaged, replace with a new power cord (with plugs on both ends) specified by Minolta.
     If the power cord (inlet type) is not connected to the copier securely, a contact problem may lead to increased resistance, overheating, and risk of fire.



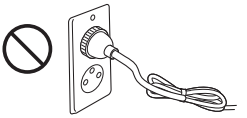


- Check whether the power cord is not stepped on or pinched by a table and so on.
  Overheating may occur there, leading to a risk of fire.

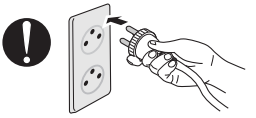


## ⚠WARNING: Power Plug and Cord

- Do not bundle or tie the power cord.
  Overheating may occur there, leading to a risk of fire.



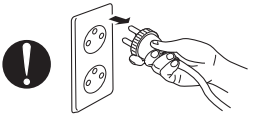
- Check whether dust is collected around the power plug and wall outlet.
  Using the power plug and wall outlet without removing dust may result in fire.



- Do not insert the power plug into the wall outlet with a wet hand.
  The risk of electric shock exists.

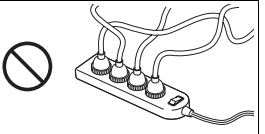


- When unplugging the power cord, grasp the plug, not the cord.
  The cord may be broken, leading to a risk of fire and electric shock.

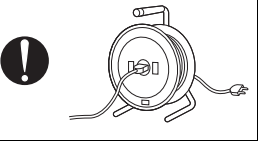


## ⚠WARNING: Wiring

- Never use multi-plug adapters to plug multiple power cords in the same outlet.
  If used, the risk of fire exists.

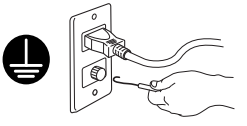


- When an extension cord is required, use a specified one.
  Current that can flow in the extension cord is limited, so using a too long extension cord may result in fire.
  Do not use an extension cable reel with the cable taken up. Fire may result.



## ⚠WARNING: Ground Lead

- Check whether the copier is grounded properly.
  If current leakage occurs in an ungrounded copier, you may suffer electric shock while operating the copier. Connect the ground lead to one of the following points:
  a. Ground terminal of wall outlet
  b. Ground terminal for which Class D work has been done



## ⚠WARNING: Ground Lead

- Pay attention to the point to which the ground lead is connected.
  Connecting the ground lead to an improper point such as the points listed below results in a risk of explosion and electric shock:
  a. Gas pipe (A risk of explosion or fire exists.)
  b. Lightning rod (A risk of electric shock or fire exists.)
  c. Telephone line ground (A risk of electric shock or fire exists in the case of lightning.)
  d. Water pipe or faucet (It may include a plastic portion.)



2.Installation Requirements

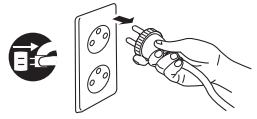
## ⚠WARNING: Prohibited Installation Place

- Do not place the copier near flammable materials such as curtains or volatile materials that may catch fire.
  A risk of fire exists.
- Do not place the copier in a place exposed to water such as rain water.
  A risk of fire and electric shock exists.



## ⚠WARNING: Nonoperational Handling

- When the copier is not used over an extended period of time (holidays, etc.), switch it off and unplug the power cord.
  Dust collected around the power plug and outlet may cause fire.



## ⚠CAUTION: Temperature and Humidity

- Do not place the copier in a place exposed to direct sunlight or near a heat source such as a heater.
  A risk of degradation in copier performance or deformation exists.
  Do not place the copier in a place exposed to cool wind.
  Recommended temperature and humidity are as follows:
  Temperature: 10°C to 30°C 50°F to 86°F
  Humidity: 10% to 80% (no dew condensation)
  Avoid other environments as much as possible.



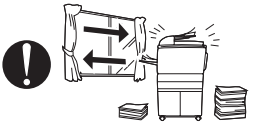
## ⚠CAUTION: Ventilation

- Do not place the copier in a place where there is much dust, cigarette smoke, or ammonia gas.
  Place the copier in a well ventilated place to prevent machine problems and image faults.



## ⚠CAUTION: Ventilation

- The copier generates ozone gas during operation, but it is not sufficient to be harmful to the human body.
  If a bad smell of ozone is present in the following cases, ventilate the room.
  a. When the copier is used in a poorly ventilated room
  b. When taking a lot of copies
  c. When using multiple copiers at the same time



## ⚠CAUTION: Vibration

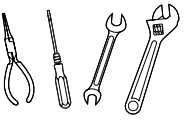
- When installing the copier, read the Installation Guide thoroughly. Be sure to install the copier in a level and sturdy place.
  Constant vibration will cause problems.



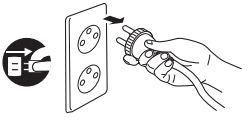
- Be sure to lock the caster stoppers.
  In the case of an earthquake and so on, the copier may slide, leading to a injury.

## ⚠CAUTION: Inspection before Servicing

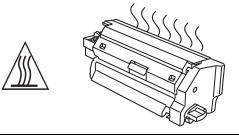
- Before conducting an inspection, read all relevant documentation (Service Manual, technical notices, etc.) and proceed with the inspection following the prescribed procedure, using only the prescribed tools. Do not make any adjustment not described in the documentation.
  If the prescribed procedure or tool is not used, the copier may break and a risk of injury or fire exists.



- Before conducting an inspection, be sure to disconnect the power plugs from the copier and options.
  When the power plug is inserted in the wall outlet, some units are still powered even if the POWER switch is turned OFF. A risk of electric shock exists.

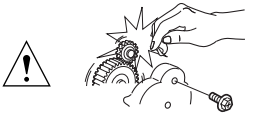


- The area around the fixing unit is hot.
  You may get burnt.



## ⚠DANGER: Work Performed with the Copier Powered

- Take every care when making adjustments or performing an operation check with the copier powered.
  If you make adjustments or perform an operation check with the external cover detached, you may touch live or high-voltage parts or you may be caught in moving gears or the timing belt, leading to a risk of injury.



## ⚠ DANGER: Work Performed with the Copier Powered

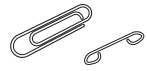
- Take every care when servicing with the external cover detached.
  High-voltage exists around the drum unit. A risk of electric shock exists.



## ⚠ WARNING: Safety Checkpoints

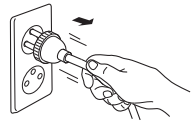
- Check the exterior and frame for edges, burrs, and other damages.
  The user or CE may be injured.

- Do not allow any metal parts such as clips, staples, and screws to fall into the copier.
  They can short internal circuits and cause electric shock or fire.



- Check wiring for squeezing and any other damage.
  Current can leak, leading to a risk of electric shock or fire.

- When disconnecting connectors, grasp the connector, not the cable.
  (Specifically, connectors of the AC line and high-voltage parts)
  Current can leak, leading to a risk of electric shock or fire.



- Carefully remove all toner remnants and dust from electrical parts and electrode units such as a charging corona unit.
  Current can leak, leading to a risk of copier trouble or fire.

- Check high-voltage cables and sheaths for any damage.
  Current can leak, leading to a risk of electric shock or fire.



- Check electrode units such as a charging corona unit for deterioration and sign of leakage.
  Current can leak, leading to a risk of trouble or fire.

- Before disassembling or adjusting the write unit incorporating a laser, make sure that the power cord has been disconnected.
  The laser light can enter your eye, leading to a risk of loss of eyesight.



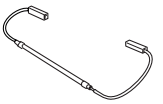
- Do not remove the cover of the write unit. Do not supply power with the write unit shifted from the specified mounting position.
  The laser light can enter your eye, leading to a risk of loss of eyesight.

- When replacing a lithium battery, replace it with a new lithium battery specified in the Parts Guide Manual. Dispose of the used lithium battery using the method specified by local authority.
  Improper replacement can cause explosion.

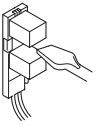


## ⚠WARNING: Safety Checkpoints

- After replacing a part to which AC voltage is applied (e.g., optical lamp and fixing lamp), be sure to check the installation state.
  A risk of fire exists.



- Check the interlock switch and actuator for loosening and check whether the interlock functions properly.
  If the interlock does not function, you may receive an electric shock or be injured when you insert your hand in the copier (e.g., for clearing paper jam).



- Make sure the wiring cannot come into contact with sharp edges, burrs, or other pointed parts.
  Current can leak, leading to a risk of electric shock or fire.

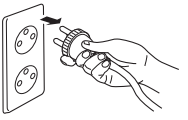


- Make sure that all screws, components, wiring, connectors, etc. that were removed for safety check and maintenance have been reinstalled in the original location. (Pay special attention to forgotten connectors, pinched cables, forgotten screws, etc.)
  A risk of copier trouble, electric shock, and fire exists.

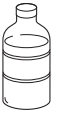



## ⚠HANDLING OF MATERIALS FOR SERVICING

- Unplug the power cord from the wall outlet.
  Drum cleaner (isopropyl alcohol) and roller cleaner (acetone-based) are highly flammable and must be handled with care. A risk of fire exists.



- Do not replace the cover or turn the copier ON before any solvent remnants on the cleaned parts have fully evaporated.
  A risk of fire exists.



- Use only a small amount of cleaner at a time and take care not to spill any liquid. If this happens, immediately wipe it off.
  A risk of fire exists.

- When using any solvent, ventilate the room well.
  Breathing large quantities of organic solvents can lead to discomfort.



## ⚠ DANGER: HANDLING OF MATERIALS FOR SERVICING

- Toner and developer are not harmful substances, but care must be taken not to breathe excessive amounts or let the substances come into contact with eyes, etc. It may be stimulative.
  If the substances get in the eye, rinse with plenty of water immediately. When symptoms are noticeable, consult a physician.



- Never throw the used cartridge and toner into fire.
  You may be burned due to dust explosion.



[3] CONCLUSION

1. Safety of users and customer engineers depends highly on accurate maintenance and administration. Therefore, safety can be maintained by the appropriate daily service work conducted by the customer engineer.
2. When performing service, each copier on the site must be tested for safety. The customer engineer must verify the safety of parts and ensure appropriate management of the equipment.

# SAFETY INFORMATION

## IMPORTANT INFORMATION

The Center for Devices and Radiological Health (CDRH) of the U.S. Food and Drug Administration implemented regulations for laser products manufactured since August 1, 1976. Compliance is mandatory for products marketed in the United States.

This copier is certified as a “Class 1” laser product under the U.S.
Department of Health and Human Services (DHHS) Radiation Performance Standard according to the Radiation Control for Health and Safety Act of 1968. Since radiation emitted inside this copier is completely confined within protective housings and external covers, the laser beam cannot escape during any phase of normal user operation.

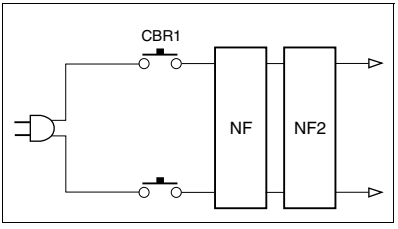
# SAFETY CIRCUITS

This machine is provided with the following safety circuits to prevent machine faults from resulting in serious accidents.

[1] Overall protection circuit
[2] L2 and L4 (fixing heater lamps) overheating prevention circuit

These safety circuits are described below to provide the service engineer with a renewed awareness of them in order to prevent servicing errors that may impair their functions.

## [1] Overall Protection Circuit

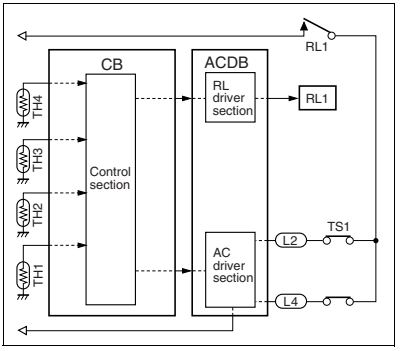



**1. Protection by CBR1 (circuit breakers)**

CBR1 interrupt the AC line instantaneously when an excessive current flows due to a short in the AC line.

**⚠CAUTION:**
**The CBR1 functions must not be deactivated under any circumstances.**

## [2] Protection by L2 and L4 (fixing heater lamps) overheating prevention circuit




**1. Protection by software**

The output voltage from TH1 (fixing temperature sensor 1) is read by the CPU. If this voltage is abnormal, L2 (fixing heater lamp 1), and L4 (fixing heater lamp 3), and RL1 (main relay) are turned OFF.

**⚠CAUTION:**
**Do not change the gap between the roller and TH1. When replacing TH1, check the specified mounting dimensions.**
**The RL1 function must not be deactivated under any circumstances.**

**2. Protection by the hardware circuit**

The output voltages from TH1 and TH2 (fixing temperature sensor 2), TH3 (fixing temperature sensor 3), and TH4 (fixing temperature sensor 4) are compared with the abnormality judgement reference value in the comparator circuit. If the output voltage from TH1, TH2, TH3, or TH4 exceeds the reference value, L2, L4, and RL1 are turned off in hardware means.

**⚠CAUTION:**

**Periodically check the TH2 and TH4 faces contacting the roller, and replace TH2 and/or TH4 if any abnormality is detected. Do not change the gap between the roller and each sensor TH2 and TH4. When replacing TH2 or TH4, check the specified mounting dimensions.**

**The RL1 function must not be deactivated under any circumstances.**

**3. Protection by TS1 (thermostat (upper)) and TS2 (thermostat (lower))**

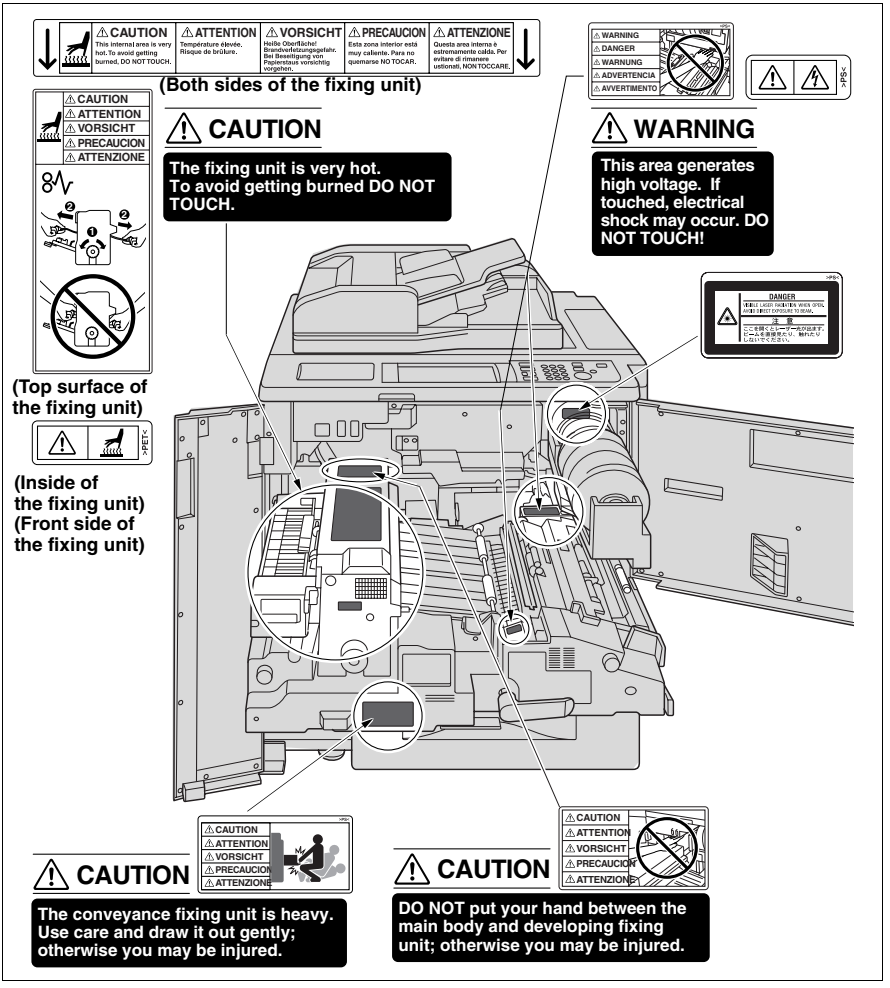
TS1 is turned off when the temperature of the fixing roller (upper) exceeds the specified value, and TS2 is turned off when the temperature of the heating (upper) roller exceeds the specified value, thus interrupting the power to L2 and L4 directly.

**⚠CAUTION:**

**Do not use any other electrical conductor in place of TS1 and TS2.**

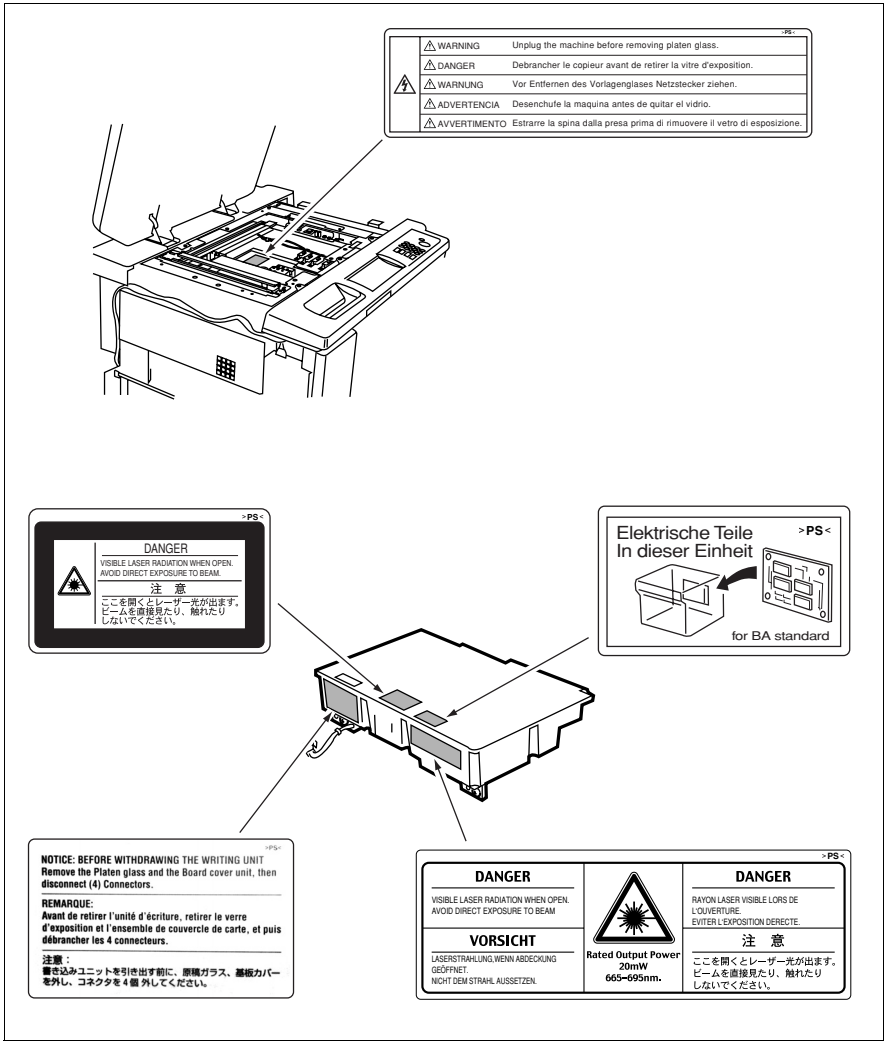
# INDICATION OF WARNING ON THE MACHINE

Caution labels shown below are attached in some areas on/in the machine areas.
When accessing these areas for maintenance, repair, or adjustment, special care should be taken to avoid burns and shock hazards.



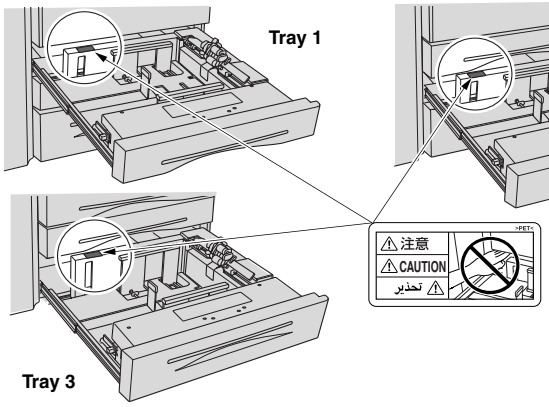

⚠CAUTION

**Please adhere to all caution labels to avoid burns or injury.**




⚠CAUTION

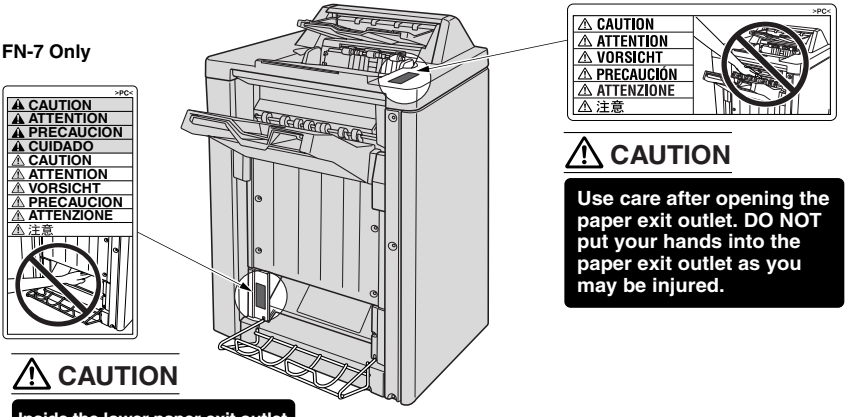
**Please adhere to all caution labels to avoid burns or injury.**




**⚠ CAUTION**

**DO NOT put your hand between the main body and tray; otherwise you may be injured.**

**FN-7 Only**




**⚠ CAUTION**

**Use care after opening the paper exit outlet. DO NOT put your hands into the paper exit outlet as you may be injured.**

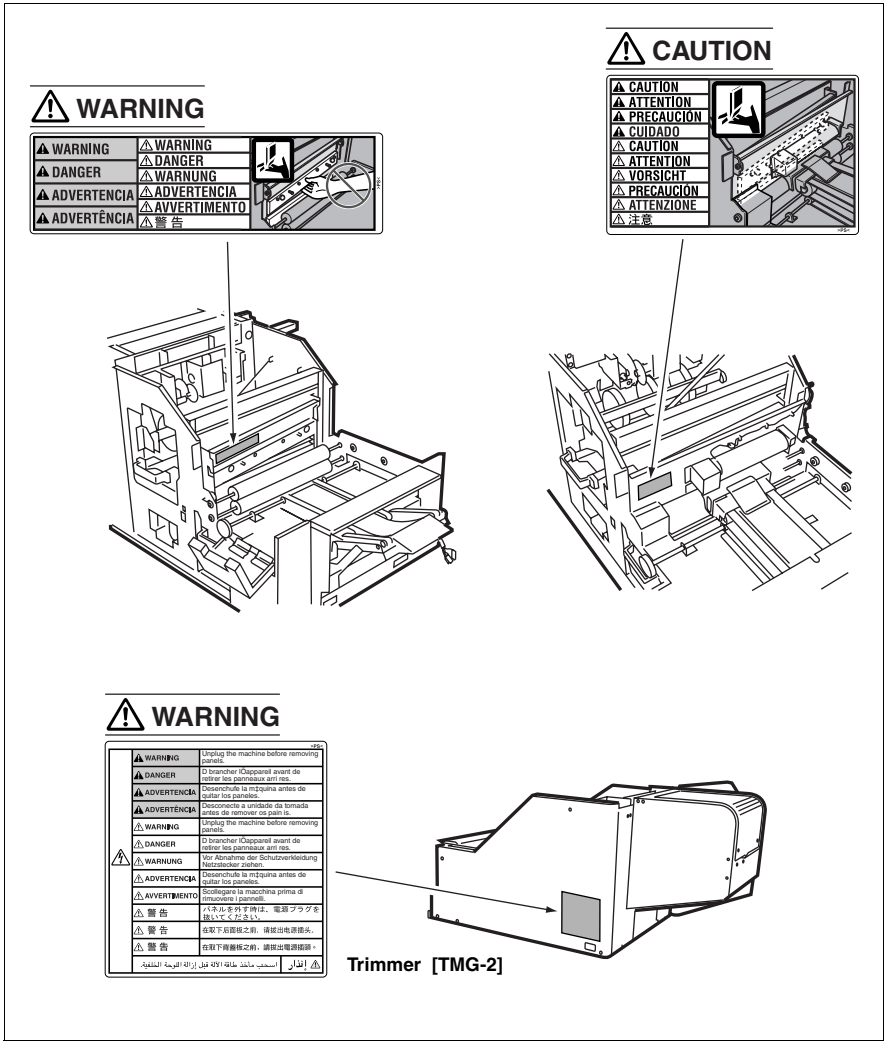
**⚠ CAUTION**

**Inside the lower paper exit outlet is the roller drive unit.**
**DO NOT put your hands into the paper exit outlet as you may be injured**

**Finisher [FN-7 / FN-115]**

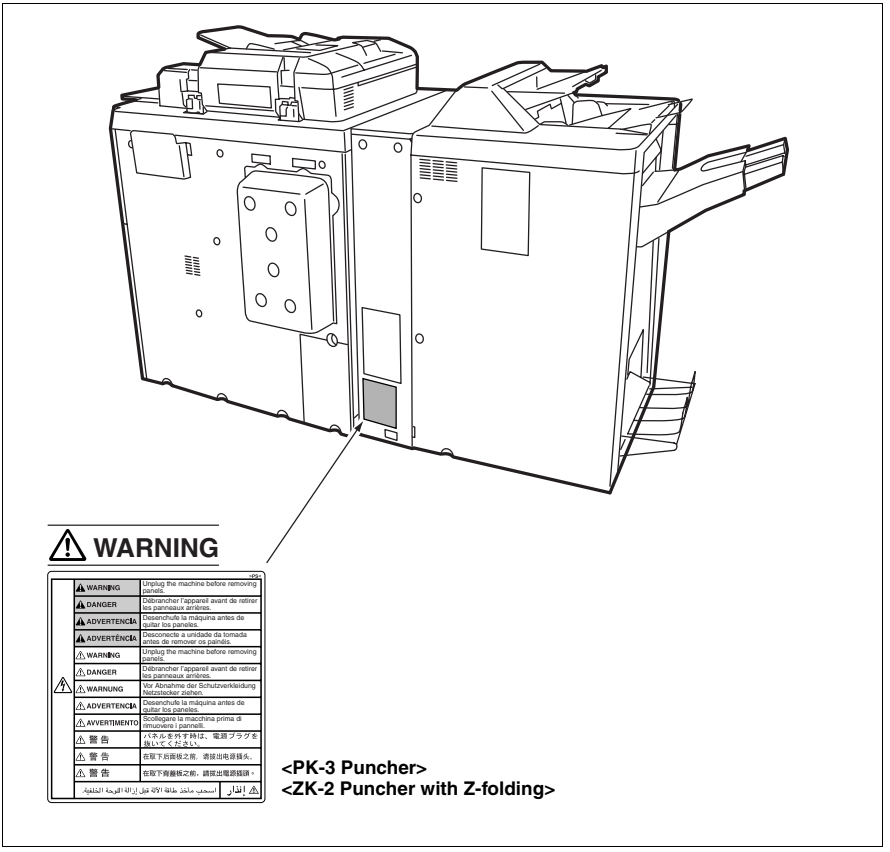
⚠CAUTION

**Please adhere to all caution labels to avoid burns or injury.**




⚠CAUTION

**Please adhere to all caution labels to avoid burns or injury.**




**<PK-3 Puncher>**
**<ZK-2 Puncher with Z-folding>**

⚠CAUTION

**Please adhere to all caution labels to avoid burns or injury.**